

Multiple Choice Questions – 3

All questions carry 1 mark

101. Topological optimization is related to
 - a. maximization of energy requirement only
 - b. minimization of environmental impact only
 - c. minimization of the operating temperature only
 - d. arrangement of various equipments
102. Parametric optimization deals with
 - a. optimization of operating parameters of a process
 - b. optimization of stochastic process only
 - c. optimization of environmental impact only
 - d. none of the above
103. Tuning of PID controller is usually
 - a. multiobjective optimization
 - b. single objective optimization
 - c. stochastic optimization
 - d. single variable optimization
104. Stochastic optimization can be used
 - a. to optimize fluidized bed
 - b. to optimize heterogeneous catalytic reactor
 - c. to optimize any systems with randomness
 - d. all of these

105. The important mathematical programming approach for reactor networks synthesis
- superstructure optimization
 - targeting
 - none of these
 - both (a) and (b)
106. For any reactor optimization problem
- we can optimize yield only
 - we can optimize selectivity only
 - we can optimize both selectivity and yield
 - optimization of yield is not possible
107. What will be the largest area of rectangle that can be inscribed in a semicircle of radius r .
- $\frac{1}{2}r^2$
 - r^2
 - $2r^2$
 - $3r^2$
108. Which point on the parabola $y^2 = 2x$ is closest to the point (1,4)
- (3,4)
 - (2,3)
 - (2,2)
 - (1,2)
109. Newton Method always gives us
- global optima
 - local optima
 - global minima only
 - global maxima
110. For Mutation operation,
- three chromosomes are required
 - two chromosomes are required
 - only one chromosome is required
 - four chromosomes are required
111. Termination criteria for trust-region method
- The value of $|f(x_k) - f(x_{k+1})|$ is less than the termination criterion in any step
 - The value of $\left\| (x_k - x_{k+1})^T \left(g_k + \frac{1}{2} B_k (x_k - x_{k+1}) \right) \right\|$ is less than the termination criterion in any step
 - The trust region radius Δ_k has shrunk to less than the termination criterion in any step
 - all of the above
112. “Principle of optimality” for dynamic programming is
- Irrespective of the initial state and initial decisions, the remaining decisions must make an optimal policy with regard to the state resulting from the first decisions
 - The final result largely depends on the initial state and initial decisions
 - The final result largely depends on the initial state but independent of initial decisions
 - all of the above
113. The blending of petroleum product can be optimized using
- single variable unconstrained method
 - integer programming
 - dynamic programming
 - linear programming

114. Heat Exchanger Network can be decomposed as sub-problems of
 - a. Minimum utility cost
 - b. Minimum number of units
 - c. Minimum investment cost network configurations
 - d. all of the above
115. For reactor network synthesis, we can optimize
 - a. selectivity
 - b. yield
 - c. both a and b
 - d. neither a nor b
116. Choose the correct statement
 - a. heat exchanger optimization is not possible
 - b. optimization method can not be applied for pollution control
 - c. diameter of pipe can be optimized for fluid flow
 - d. all are wrong
117. Choose the wrong statement
 - a. a constrained optimization problem can be converted to unconstrained problem
 - b. random search method can be used for multi-variable optimization problem
 - c. multiobjective optimization problem should have same dimension for all variables
 - d. Real time optimization is possible for chemical plants
118. Stochastic optimization can be used
 - a. to optimize fluidized bed
 - b. to optimize heterogeneous catalytic reactor
 - c. to optimize any systems with randomness
 - d. all of these

Answer

101 (d)	102 (a)	103 (a)	104 (d)	105 (d)	106 (c)	107 (b)	108 (c)
109 (b)	110 (c)	111 (d)	112 (a)	113 (d)	114 (d)	115 (c)	116 (c)
117 (c)	118 (d)						

